



People's Education Society's (Mumbai)

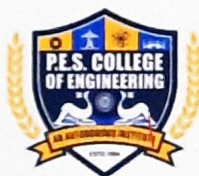
P. E. S. COLLEGE OF ENGINEERING

(An Autonomous Institute)

Nagsen Vana, Chhatrapati Sambhajnagar, Maharashtra, 431002

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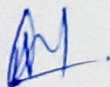
CURRICULUM FOR POST GRADUATE PROGRAMME

Department of Mechanical Engineering

M. Tech. in

(Advanced Manufacturing and Mechanical Systems Design)

**In line with National Education Policy 2020 Guidelines
[With Effect from the Academic Year 2025-2026]**

			13/09/2025	1.00
Chairman Board of Studies	Dean Academics	Chairman Academic Council	Date of Release	Version



P.E.S. College of Engineering, Chhatrapati Sambhajnagar
(An Autonomous Institute)

Department of Mechanical Engineering
First Year Teaching and Evaluation Scheme

w. e. f. from 2025-2026

Program: M. Tech. In

Advanced Manufacturing and Mechanical Systems Design



Semester-I

Sr. No	Course Category	CourseCode	CourseName	Teaching Scheme			Evaluation Scheme				Credits
				L	T	P	CA	MSE	ESE	Total	
1	PCC	MTPESAMSD101T	Advanced Methods in Engineering Design	3	1	-	20	20	60	100	4
2	PCC	MTPESAMSD102T	Modeling and Analysis of Manufacturing Systems	3	1	-	20	20	60	100	4
3	PCC	MTPESAMSD103T	Modern Manufacturing Techniques	3	1	-	20	20	60	100	4
4	PEC	MTPESAMSDPE104AT MTPESAMSDPE104BT MTPESAMSDPE104CT	Elective-I	3	-	-	20	20	60	100	3
5	PEC	MTPESAMSDPE105AT MTPESAMSDPE105BT MTPESAMSDPE105CT	Elective-II	3	-	-	20	20	60	100	3
6	PCC	MTPESAMSD106L	CAD/CAM Lab	-	-	2	60	-	40	100	1
7	PCC	MTPESAMSD107L	Creative Problem-Solving Laboratory	-	-	2	60	-	40	100	1
8	ISSMC	MTPESAMSD108L	English for Research paper Writing	-	-	2	60	-	40	100	1
9	AU										
Total				15	3	6	280	100	420	800	21

Programme Elective Course - I

Course Type	Course Code	Course Name
PEC-I	MTPESAMSDPE104AT	Manufacturing Planning & Control
PEC-I	MTPESAMSDPE104BT	Sustainable Manufacturing
PEC-I	MTPESAMSDPE104CT	Lean Manufacturing

Programme Elective Course - II

Course Type	Course Code	Name of the Course
PEC II	MTPESAMSDPE105AT	Failure Analysis and Design
PEC-II	MTPESAMSDPE105BT	Process Equipment Design
PEC-II	MTPESAMSDPE105CT	Ergonomics in Design and Manufacturing

Semester-II

Sr. No	Course Category	Course Code	Course Name	Teaching Scheme			Evaluation Scheme				Credits
				L	T	P	CA	MSE	ESE	Total	
1	PCC	MTPESAMSD201T	Additive Manufacturing	03	01	--	20	20	60	100	4
2	PCC	MTPESAMSD202T	Design Optimization	03	01	--	20	20	60	100	4
3	PEC	MTPESAMSDPE203AT MTPESAMSDPE203BT MTPESAMSDPE203CT MTPESAMSDPE203DT	Elective- III	03	--		20	20	60	100	3
4	PEC	MTPESAMSDPE204AT MTPESAMSDPE204BT MTPESAMSDPE204CT	Elective- IV	03	--		20	20	60	100	3
5	OE1	MTPESAMSDO205AT MTPESAMSDO205BT MTPESAMSDO205CT	Open Elective -I	03	--		20	20	60	100	3
6	PCC	MTPESAMSD206L	Decision Making and Optimization Laboratory	--	--	2	60	-	40	100	1
7	PCC	MTPESAMSD207L	Advanced Manufacturing Practices Laboratory	-	-	2	60	-	40	100	1
8	HSSMC	MTPESAMSD208L	Seminar	--	--	2	60	-	40	100	1
Total				15	02	06	280	100	420	800	20

Programme Elective Course - III

Course Category	Course Code	Course Name
PEC-III	MTPESAMSDPE203AT	Robotics and Industrial Automation
PEC-III	MTPESAMSDPE203BT	Advanced Materials and Processing
PEC-III	MTPESAMSDPE203CT	Artificial Intelligence and Machine Learning
PEC-III	MTPESAMSDPE203DT	Total Quality Management

Programme Elective Course - IV

Course Category	Course Code	Course Name
PEC-IV	MTPESAMSDPE204AT	Computational Techniques in Engineering Design
PEC-IV	MTPESAMSDPE204BT	Finite Element Method
PEC-IV	MTPESAMSDPE204CT	Design of Experiment

Open Elective Course - I		
Course Category	Course Code	Course Name
OE	MTPESAMSDO205AT	Quantitative Methods
OE	MTPESAMSDO205BT	Research Methodology and Intellectual Property Rights
OE	MTPESAMSDO205CT	Operations & Finance Management

- Exit option to qualify for **PG Diploma in Advanced Manufacturing and Mechanical Systems Design**: Eight weeks domain specific industrial internship after successfully completing the program's first year.



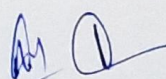
 APPROVED in.....2nd.....
 Academic Council Meeting
 Dated :-.....13/09/2025.....

Second Year Teaching and Evaluation Scheme
Program: M. Tech. In
Advanced Manufacturing and Mechanical Systems Design
w.e.f. from 2026-2027

Semester-III											
Sr. No	Course Category	Course Code	Course Name	Teaching Scheme			Evaluation Scheme				Credits
				L	T	P	CA	MSE	ESE	Total	
1	SLC	MTPESAMSD301T TO MTPESAMSD306T	NPTE/MOOC	03	--		20	20	60	100	3
2	OE2	MTPESAMSDO307AT MTPESAMSDO307BT MTPESAMSDO307CT MTPESAMSDO307DT	Open Elective -II	03	--	--	20	20	60	100	3
3	MDM1	MTPESAMSDM308AT MTPESAMSDM308BT MTPESAMSDM308CT MTPESAMSDM308DT	Multidisciplinary Minor	02	--	--	10	10	30	50	2
4	PCC10	MTPESAMSD309L	Internship	--	--	--	60		40	100	2
5	PCC11	MTPESAMSD310L	Dissertation stage -I	--	--	--	100	-	200	300	10
Total				08	00		210	50	390	650	20

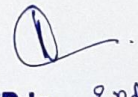
Open Elective II		
Course Category	Course Code	Course Name
OE	MTPESAMSDO307AT	Quality Control and Reliability
OE	MTPESAMSDO307BT	Metrology and Computer Aided inspection
OE	MTPESAMSDO307CT	Project Management
OE	MTPESAMSDO307DT	Design for Manufacture and Assembly

Multidisciplinary Minor		
Course Category	Course Code	Course Name
MDM	MTPESAMSDM308AT	Applications of IoT and Industry 4.0
MDM	MTPESAMSDM308BT	e-Commerce Technologies
MDM	MTPESAMSDM308CT	Data Analytics & Entrepreneurship
MDM	MTPESAMSDM308DT	AI Ethics


APPROVED in.....^{2nd}.....
Academic Council Meeting
Dated :-.....13/09/2025.....

Semester-IV											
Sr. No	Course Category	Course Code	Course Name	Teaching Scheme			Evaluation Scheme				Credits
				L	T	P	CA	MSE	ESE	Total	
1	PCC	MTPESAMSD401L	Dissertation stage -II	--	--	--	300		400	700	20
Total							300		400	700	20

Semester	Total Credits
I	21
II	20
III	20
IV	20
Total Credits	81



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 Academic Council Meeting
 Dated :-.....13/05/2025.....

SWAYAM/NPTEL ONLINE LEARNING COURSES

Sr. NO	Course Code	Course Name	Duration in weeks	Institute Offering Course	Name of Professor
1	MTPESAMSD301T	Functional and Conceptual Design	12 weeks	IIT Madras	Prof. Asokan T
2	MTPESAMSD302T	System Design for Sustainability	12 weeks	IIT Guwahati	Prof. Sharmistha Banerjee
3	MTPESAMSD302T	Metal Additive Manufacturing	12 weeks	IIT Kanpur	Prof. Janakranjan Ramkumar, Prof. Amandeep Singh Oberoi
4	MTPESAMSD304T	Organizational Behaviour	12 weeks	IIT Hyderabad	Prof. M. P. Ganesh
5	MTPESAMSD305T	Project Management for Managers	12 weeks	IIT Roorkee	Prof. Mukesh Kumar Barua
6	MTPESAMSD306T	Data Analysis & Decision Making - II	12 weeks	IIT Kanpur	Prof. Raghu Nandan Sengupta



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Academic Council Meeting
Dated :-.....13/09/2025.....